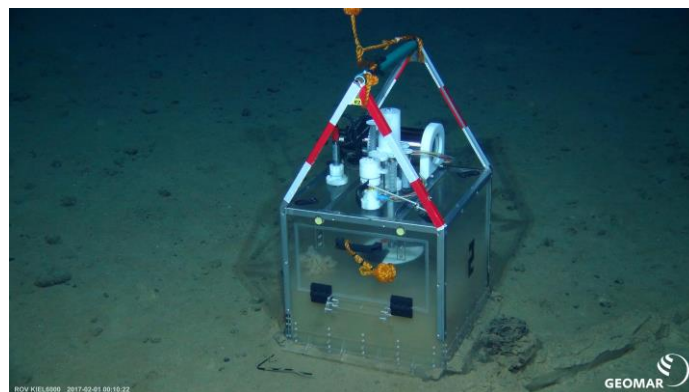


2nd weekly report (30.01.17 – 05.02.17

SO-254 „PoriBacNewZ“ 26.01.2017 (Auckland, Neuseeland) – 27.02.2017 (Auckland, Neuseeland)

Since we left Auckland eight days ago we were able to carry out the work in general as planned. The main focus so far was on the sponge communities and at all seven stations visited with water depths between 400 and 4800 m the ROV (remotely operated vehicle) was used successfully. The investigations started on January 30th at the westernmost station on the Three Kings ridge at 30° 43' S, 173° 53' E and were continued towards the east across a 4000 m deep basin to the Kermadec ridge and trench. There we sampled the easternmost and with almost 4800 m deepest station at 29° 16' S, 176° 42' W. The aim of the investigations was to assess the biodiversity and abundance of sponges and corals at the sea floor and to collect representative sponges, corals and other invertebrates for further studies on board and in the home labs of the scientists involved. At one station in addition a box was deployed over a sponge to measure its respiration by means of oxygen consumption.



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Before the dives of the ROV in the morning the sea floor is being mapped coarsely by the built-in multibeam instrument of the ship, complementary to the maps which were made available to us by New Zealand colleagues. For this coarse mapping which is ok for the ROV's sea floor survey an automated analysis of the multibeam data is sufficient. After reaching the sea floor, between half an hour and two hours after the start of the dive, depending on the depth, the investigation at the sea floor starts. One person of the eight people of the ROV team controls the vehicle and one of the scientists sits next to him to give hints to the ROV-pilot where to move the ROV and which object to collect. The view fields of the cameras of the ROV are being transmitted to big screens in the conference room where other scientists follow the dive and can give further hints to the pilot for sampling. By means of a grappler the selected object can be grasped and put into a designated box. The ROV can also be equipped with a box with plexiglass tubes to take sediment cores from the sea floor. This option was used already at several stations. For every scientist on board it is fascinating to obtain a direct insight by live camera into this

otherwise inaccessible world of the deep sea. After retrieval of the ROV in the evening, the collected

specimen of the sponges, corals and other invertebrates are taken out of the boxes, documented by photo and taxonomically and passed on to further investigations. Depending on the depth and location of the station the colonization of the sea floor by sponges varied considerably. At a few shallower stations many sponges were sighted and quite a few sampled. At deeper stations only scattered sponges and corals were spotted with a much lower collection success and at a shallow



station at Macauley Island at a geologically very young caldera no sponges at all were recorded. At Raoul Island close to shore sponges were collected from a dinghy by snorkeling.

Without the untiring, always obliging and excellent operation of the ROV team under the guidance of Dr. Friedrich Abegg these investigations were impossible. Therefore I would like to express my deep thanks to the team on behalf of all scientists

involved.

At stations 4 and 6 also work in the water column was carried out. At both stations samples were collected by CTD from the surface to 10 m above sea floor for the analysis of all parameters planned, i.e. hydrography, rare earth elements, dissolved organic matter, abundance, growth activity and community composition of the bacterioplankton. Sampling of the sediment by multi corer (MUC) unfortunately was not successful. The plexiglass tubes came back on deck without any sediment filling. Presumably the sediment at this location was too compacted or encrusted at the surface so that the plexiglass tubes could not penetrate. With the ROV camera we could later recognize this type of sediment structure and obtain an explanation for this failure, obviously not caused by a malfunctioning of the MUC. At station 4 we set up mesocosm experiments in which the response of the bacterial community to the addition of alga-derived dissolved organic matter and vitamins B1 and B12 and precursors of these vitamins are being investigated.

All station work is supported excellently and in a very cooperative way by master Lutz Mallon and his crew. One or another technical problem in the laboratories and with instruments was fixed rapidly so that all our instruments and equipment and the infrastructure on board were always ready to use and hopefully will continue to be.

Meinhard Simon im Namen der Wissenschaft und Besatzung